Appendix B

Technical Notes

Sampling

The Louisiana PRAMS program utilizes systematic stratified random sampling strategy to estimate statewide indicators. The four strata based, on geographic region of the state and birth weight, are urban - less than 1500 grams, rural - less than 1500 grams, urban - 1500 or more grams, and rural - 1500 or more grams. The sampling fractions in the 1500 or more groups include an adjustment for 30% nonresponse in each stratum (Table 1 below).

Table 1. Strata and Sampling Fractions

Birth weight /Geographic region	Sampling fraction
<1500 grams	
Urban	1/2
Rural	1/2
1500 + grams	
Urban	1/38
Rural	1/30

Birth weight was chosen as a stratum and the less than 1500 gram group was oversampled so that we could obtain more information on the under 1500 gram infants and their mothers. Geographic region was selected because we expect that results may vary among the regions and also that this adjustment had the effect of balancing the racial distribution so that race-specific estimates could be made on reasonably large samples.

Computation and Usage of Analysis Weights

Adjustments for Sample Size: The use of stratified sampling requires that each response be attributed a sampling weight, WTONE, (the reciprocal of the sampling fraction or selection probability for a given stratum) to compute Statewide estimates of the indicators of interest. The weights when summed for each stratum equal the population in that stratum.
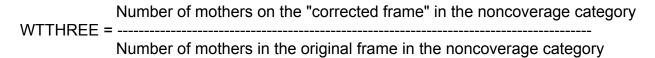
Adjustments for Nonresponse: Failure of a mother to complete a questionnaire is called unit nonresponse. The component of the analysis weight that adjusts for unit nonresponse is called the unit nonresponse weight. Unit nonresponse weights are developed within each stratum using factors that are associated with response as follows. The factors considered for Louisiana PRAMS are maternal age, education, marital status, trimester of first visit for prenatal care, parity, and race. For each stratum the factors related to response are identified. An analysis weight that includes an adjustment of the selection probability (sampling weight) and the unit nonresponse (unit

nonresponse weight) is computed for respondents in a particular response category. This analysis weight is the product of the sampling weight times the following ratio:

$$WTTWO = \frac{\text{Number of sampled mothers in the response category}}{\text{Number of respondent mothers in the response category}}$$

This ratio is adjusted by a constant factor for all response categories in a single stratum to account for different sampling weights within stratum. If there are fewer than 25 respondents in any response category, the response category is combined within one or more other response categories until all response categories have at least 25 respondents. The goal is to have enough respondent mothers in each category so that a few mothers do not unduly influence the average of their responses.

Adjustment for Omissions in the Sampling Frame (incomplete frame): Adjustment for omission in the sampling frame is defined as a sampling frame noncoverage weight. Mothers who were not included in, or "covered" by, the sampling frame are adjusted as follows.

This weight adjusts for women whose live births were not included in the sampling frame (birth registry). Factors related to noncoverage such as maternal county of residence and hospital of delivery are examined. For each non-coverage category, a "corrected" frame size is computed by summing the "original" sampling frame and the missed mothers. Then, using the corrected frame size, the noncoverage weight for the respondents in each noncoverage category will be computed. An analysis weight that adjusts for the sampling weight, the nonresponse weight, and the noncoverage weight is computed for each respondent in the survey. This analysis weight is the product of the analysis weight computed previously times the following ratio:

$$WTTHREE = \frac{\text{Number of mothers on the "corrected frame" in the noncoverage category}}{\text{Number of mothers in the original frame in the noncoverage category}}$$

Final Analysis Weights: The final weight, WTANAL, used in analysis combines the previous described weight for each individual as follows:

WTANAL = WTONE X WTTWO X WTTHREE

2004 Discussion of Weights:

Response rates by strata are shown in Table 2.

Table 2. Response Rates and Number responding by Strata[1]

Stratum	% Responding	# Responding
VLBW Urban	67%	246
VLBW Rural	69%	149
L/NBW Urban	70%	638
L/NBW Rural	71%	626
Total	70%	1659

[1] VLBW = <1500 grams birth weight, L/NBW = >=1500 grams birth weight

Factors associated with response in each stratum are shown in Table 3. WTTWO gives the weighting factor for each group. WTTWO close to 1.0 implies that almost all in this category responded. WTTWO close to 2.0 implies that only half of the group responded.

Table 3. Some Factors Associated with Response by Strata[1]

Stratum	Some Factors Associated with Poor Response (WTTWO)
VLBW Urban	Others (1.6) Education>12 and age>=30 and prenatal care in 1st trimester (1.1)
VLBW Rural	Education>=12 (1.4) Education<12 (1.7)
L/NBW Urban	Education>=12 and married (1.3) Others (1.5) Exclude highest response group and education<12 and previous children (2.3)
L/NBW Rural	Mostly non-Black and married and education>=12 (1.2) Exclude highest response group and mostly (previous children or (no previous children and ed>12)) (1.8) Others (1.3)

[1] VLBW = <1500 grams birth weight, L/NBW = >=1500 grams birth weight

One Louisiana hospital had low coverage of births in the sampling frame. The reasons for this lack of coverage are being investigated. Weights were not adjusted to account for this issue, due to the fact that there were less than 25 respondents from this hospital.

Missing Data:
The estimate of missing data on a statewide basis in any weighted analysis is computed as the "frequency of missing or unknown data" as a percent of the total frequency in the weighted analysis (including weighted and unknown data). The total number of births, meeting the criteria for this study from January 1, 2004 - December 31, 2004 is 63,572. This weighted figure is calculated from a sample of 2384 women. Unless otherwise noted, missing data estimates are based on this number. ALL MISSING DATA ARE EXCLUDED BEFORE ESTIMATES ARE COMPUTED. Percents that do not add up to 100 percent are due to "round off error", except when it is a multiple response question.

Reliability Estimates:

The standard errors when presented are computed by means of SUDAAN.